NAKANO EMC

高周波ノイズシミュレーター

仕様　ENS-24 シリーズ

		ENS-24XA	ENS-24PA
			
型　名		ENS-24XA	ENS-24PA
パルス幅		方形波：50ns～1000ns(50ns ステップ)三角形：1μs	
パルス電圧／極性		方形波:±200V MAX.　三角波:±400V/±4000V MAX.	
立ち上がり時間		方形波:1ns(±10%)　三角波: 30ns(±20%)	
繰返し周期	MANU.Trig	押しボタンスイッチによる	
	EXT.Trig	1Hz～100Hz MAX.TTL レベル	
	VARI.Trig	約 30～100Hz	
	LINE　同期	50Hz 又は、60Hz　注入位相角　0～360°	
被測定装置		AC240V MAX. DC65V MAX.	
電力容量		単相　20A MAX.	単/3 相　30A MAX.
所要電源		AC100V 50Hz/60Hz 200VA	
形状・重量		430×250×400(W×H×Dmm) 約 20kg	430×250×400(W×H×Dmm) 約 25kg
標準添付品		電源ケーブル、ライン入力ケーブル、ライン出力同軸ケーブル、 パルス幅設定ケーブル、 パルス入力ケーブル、波形観測用 50Ω ターミネーション、取扱説明書	

販売・お問い合わせ
ナカノEMC株式会社
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TEL　06-6656-4747

製造元：(株)ネオシステム

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高周波ノイズシミュレーター

仕様　ENS-30 シリーズ

			
型　名		ENS-30XA	ENS-30PA
パルス幅		方形波：50ns～1000ns(50ns ステップ)	
パルス電圧／極性		方形波：±3000V MAX.(50Ω 終端の時)	
立ち上がり時間		方形波：1ns(±10%)	
繰返し周期	MANU.Trig	押しボタンスイッチによる	
	EXT.Trig	1Hz～60Hz MAX.TTL レベル	
	VARI.Trig	約 20～60Hz	
	LINE 同期	50Hz 又は、60Hz　注入位相角 0～360°	
被測定装置		AC240V MAX. DC65V MAX.	
電力容量		単相　20A MAX.	単/3 相　30A MAX.
所要電源		AC100V 50Hz/60Hz 500VA	
形状・重量		430×300×500(W×H×Dmm) 約 25kg	430×300×500(W×H×Dmm) 約 30kg
標準添付品		電源ケーブル、ライン入力ケーブル、ライン出力同軸ケーブル パルス幅設定ケーブル、 パルス入力ケーブル、波形簡易観測用 50Ω ターミネーション、取扱説明書	

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高周波ノイズシミュレーター

仕様 ENS-40 シリーズ

		
型　名	ENS-40XA	ENS-40PA
パルス幅	方形波：50ns～1000ns(50ns ステップ)	
パルス電圧／極性	方形波：±4000V MAX.(50Ω 終端の時)	
立ち上がり時間	方形波：1ns(±10%)	
繰返し周期 MANU.Trig	押しボタンスイッチによる	
繰返し周期 EXT.Trig	1Hz～60Hz MAX.TTL レベル	
繰返し周期 VARI.Trig	約 20～60Hz	
繰返し周期 LINE 同期	50Hz 又は、60Hz　注入位相角　0～360°	
被測定装置	AC240V MAX. DC65V MAX.	
電力容量	単相　20A MAX.	単/3 相　30A MAX.
所要電源	AC100V 50Hz/60Hz 500VA	
形状・重量	630×300×500(W×H×Dmm) 約 35kg	630×300×500(W×H×Dmm) 約 40kg
標準添付品	電源ケーブル、ライン入力ケーブル、ライン出力同軸ケーブル、 パルス入力ケーブル、 波形簡易観測用 50Ω ターミネーション、取扱説明書	

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4. OUTLINE

The ENS-30XA is a noise simulator which can generate high-voltage rectangular wave impulses. The maximum output voltage is 3kV for rectangular waves.

these output waves can be superposed on an AC or DC power line and applied to the EUT.

5. SPECIFICATIONS

(1) Output pulse voltage

3000 V max. (when terminated with 50 Ω)

(2) Output pulse width

50 ns to 1 μs (variable in 50 ns steps when the PULSE OUT connector is terminated with 50 Ω).

(3) Pulse rise time (at LINE OUT connector)

1 ns ±10%

(4) Pulse repetition frequency (selector position in parentheses)

①Manual trigger: By push button (MAN/EXT)

②External trigger: By TTL level signal (60 Hz max.) (MAN/EXT)

③Automatic trigger: 20 to 60 Hz ±10% variable (VARI)

④AC power synchronization: 50/60 Hz (LINE)

(5) Output pulse polarity

Positive or Negative (manual selection)

(6) Pulse injection phase angle

0 to 360° continuously variable for AC power supply (50/60 Hz)

(7) Rated power capacity of EUT

240 VAC max. and 20 A max. (single-phase)

65 VDC max. and 20 A max.

(8) Power

Single-phase 230 VAC ±10% , 50/60 Hz, and approx, 500 VA

(9) Environmetal Requirements

Operating Temperature: 5 to 40 ℃

Storage Temperature : -10 to 50 ℃

Relative Humidity: no more than 80% (without dew)

1. WHAT IS A NOISE SIMULATOR?

A noise simulator is an electrical noise simulator or high-frequency transient noise simulator.

This simulator is used to test a piece of equipment under simulated working conditions, it is not a measuring unit.

A test using a simulator should give accurate results. So, certain electrical standards must be imposed to keep conditions the same for each piece of equipment under test (EUT) and for each time a test is done.

The conditions when noise is applied greatly affect the results of a test using a simulator.

Major simulated noise parameters are as follows:

(1) Voltage with a specified output impedance (usually 50 Ω)

(2) Pulse rise time (usually 1 ns)

(3) Pulse width

(4) Transmission mode (normal or common mode with direct coupling, and radiation mode)

These parameters are interdependent.

Voltage in (1) is the most important parameter. However, the effect of the voltage depends on output impedance. Noise resistance must be indicated as a noise voltage at a certain output impedance.

For example, EUT-1 and EUT-2 may both withstand 500 V noise produced by noise simulators. If the noise simulator for EUT-1 has an output impedance of 300 Ω and that for EUT-2 has an output impedance of 50 Ω, however, the EUTs may not have the same noise resistance.

EUT-3 may withstand a 500 V noise produced by a noise simulator of unknown impedance. However, this does not necessarily mean the equipment can withstand 500 V noise produced by any noise simulator, irrespective of output impedance.

Pulse rise time in (2) has two physical meanings. One, the greater the di/dt or dv/dt value, the faster the rise time. Two, the faster the rise time, the further the upper limit of the impulse frequencies extends.

di/dt is closely related to Voltage in (1). For example, the inductance-induced voltage is directly proportional to the di/dt value.

Ideally, the impulse frequency range should cover all the frequencies of noise EUT receives in its working environment. This simulator, with a very wide frequency band, can vary an output pulse width from 50 ns to 1 μs in units of 50 ns.

Pulse width in (3) is mainly related to the energy level of noise, and also has some effect on frequency components.

Since the pulse width increases with energy level, it has some correlation with voltage and rise time. Experiments on digital equipment, however, did not reveal simple linear relationships between pulse width, voltage, and rise time. The relationship depended on the equipment characteristics. Some equipment showed a tendency for correlation at smaller pulse widths. Other equipment showed the opposite tendency.

Transmission mode (normal or common mode with direct coupling and radiation mode) in (4) is related to the EUT's noise protection. This is an important parameter when evaluating whether the protection is effective.

For example, let us consider noise filters used in electronic equipment.

In some circuit configurations, noise filters remove normal-mode noise well, but not common-mode noise. Noise filters are often effective against noise on power lines but not at all effective against radiation noise. For satisfactory noise prevention, measures must be taken against noise of each mode.

Current noise simulators are not efficient enough to effectively simulate radiation noise. Such noise can only be generated by applying output pulses from a noise simulator to a copper loop antenna about 30 to 50 cm in diameter. This helps with checking the influence of radiation noise. However, this method is not yet fully understood.

Sanki optionally supplies a type-25 loop antenna (25 mm in diameter.) for local noise radiation tests in extremely small areas. The antenna is sold with a field strength calibration sheet and is suitable for practical use.